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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,255	03/21/2001	Shunpei Yamazaki	07977-107002	5578
26171	7590	03/30/2005	EXAMINER	
FISH & RICHARDSON P.C. 1425 K STREET, N.W. 11TH FLOOR WASHINGTON, DC 20005-3500			NADAV, ORI	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/814,255	Applicant(s) YAMAZAKI ET AL.	
	Examiner ori nadav	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,9,11,15,19-21 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,9,11,15,19-21 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 11, 15, 19-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (5,846,877) in view of Tu (5,308,794) and Applicant Admitted Prior Art (AAPA).

Kim teaches in figure 3D and related text a semiconductor device over a substrate 100 comprising an interlayer insulating film 102 formed on the substrate, a contact hole formed through the interlayer insulating film; a wiring electrode 106 comprising aluminum, wherein the wiring electrode contains germanium at a concentration of 13 atomic percentage. (column 1, lines 54-55 and column 3, lines 62-64).

Kim does not teach using a wiring electrode containing germanium at a concentration from 20 to 40 atomic percentage in a thin film transistor.

Tu teaches in figure 1a and related text a semiconductor device over a substrate 22 comprising an interlayer insulating film 18 formed on the substrate, a contact hole formed through the interlayer insulating film; a stud 106 comprising aluminum, wherein

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the wiring electrode contains germanium at a concentration of 20 to 40 atomic percentage (see figure 2).

AAPA teaches in figure 1 and related text a semiconductor device comprising at least one thin film transistor over a substrate comprising a wiring connection.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a wiring electrode containing germanium at a concentration from 20 to 40 atomic percentage in a thin film transistor in Kim's device, in order to reduce the contact resistance of the device, to improve the adhesion between the layers; and to reduce the electromigration effect, subjected to routine experimentation and optimization, and in order to use the device in an application which require a thin film transistor, respectively.

Note that when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller , 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Applicant can rebut a prima facie case of obviousness based on overlapping ranges by showing unexpected results or the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." In re Woodruff , 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results.

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Note further that substitution of materials is not patentable even when the substitution is new and useful. *Safetran Systems Corp. v. Federal Sign & Signal Corp.* (DC NIII, 1981) 215 USPQ 979.

Regarding the claimed limitation of using the device in a thin film transistor, the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Furthermore, a recitation which occurs in the preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding claim 9, Kim teaches two conductive films 108, 106 comprising aluminum electrically connected with each other in the contact hole.

Regarding claims 11, 19, 20 and 23, AAPA teaches at least one thin film transistor being an active matrix type EL display device formed over a substrate and comprising at least a semiconductor region, a gate electrode, a gate insulating film interposed there between; and an interlayer insulating film formed over the thin film transistor.

Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Tu and AAPA, as applied to claims 15 and 20 above, and further in view of Yamaha et al. (5,641,993).

Kim, Tu and AAPA teach substantially the entire claimed structure, as applied to claims 15 and 20 above, including a conductive layer 108 comprising aluminum. Kim, Tu and AAPA do not teach an interlayer insulating film formed on the conductive layer.

Yamaha et al. teach in figure 1 and related text a semiconductor device comprising at least one transistor over a substrate comprising a conductive layer 14 comprising aluminum, an interlayer insulating film 16 formed on the conductive layer 14, a contact hole Qb formed through the interlayer insulating film; a wiring 18B electrically connected with the conductive layer in the contact hole, and an alloy comprising at least one selected from the group consisting of antimony existing at least in the contact hole between the conductive layer and the wiring. (Column 3, lines 11-23).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form an interlayer insulating film formed on the conductive layer in the device of Kim, Tu and AAPA, in order to use the device in an application which require multi-level wiring.

Regarding claim 4, AAPA teaches at least one thin film transistor being an active matrix type EL display device.

Response to Arguments

Applicant's arguments with respect to claims 1-2, 4, 9, 11, 15, 19-21 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**



O.N.
March 23, 2005

ORI NADAV
PRIMARY EXAMINER
TECHNOLOGY CENTER 2800